

WHAT IS CLAIMED IS:

- 1 1. A method of preparing a supported catalyst from a liquid
2 catalyst, the method comprising:
3 dispersing the liquid catalyst in a non-reactive liquid, the non-reactive
4 liquid being at a sufficiently low temperature to freeze the liquid catalyst to form a
5 frozen catalyst;
6 dispersing a solid carrier in the non-reactive liquid wherein the frozen
7 catalyst contacts the solid carrier; and
8 removing the non-reactive liquid.
- 1 2. The method of claim 1 wherein the non-reactive liquid is
2 liquified nitrogen gas, liquified argon gas, or liquified helium gas.
- 1 3. The method of claim 1 wherein the step of removing the non-
2 reactive liquid is performed by evaporation of the non-reactive liquid.
- 1 4. The method of claim 1 wherein the solid carrier is an
2 inorganic oxide, inorganic silicate, inorganic chloride or organic polymer resin.
- 1 5. The method of claim 4 wherein the solid carrier is an
2 inorganic oxide selected from the group consisting of silica, alumina, silica-alumina,
3 magnesia, titania and zirconia.
- 4 6. The method of claim 4 wherein the solid carrier is silica.
- 1 7. The method of claim 4 wherein the inorganic oxide has a
2 surface area from 10 to 700 m² /g, a pore volume from 0.1 to 4 ml/g, average
3 particle size from 10 to 500 µm, and a pore diameter from 10 to 1000 Å.
- 1 8. The method of claim 4 wherein the inorganic oxide is pre-
2 treated to remove all or a portion of hydroxyl functionality present on the surface
3 of the solid carrier.

1 9. The method of claim 8 wherein the pretreatment is
2 accomplished by thermal treatment, chemical treatment, or a combination thereof.

1 10. The method of claim 1 wherein the supported catalyst contains
2 from 0.001 to 0.5 mmole transition metal per gram of solid carrier.

1 11. The method of claim 1 wherein the liquid catalyst comprises
2 a group 3 to group 10 transition metal complex or an organometallic compound.

1 12. The method of claim 1 wherein the liquid catalyst comprises
2 a component selected from the group consisting of a Ziegler-Natta catalyst, a
3 chromium based catalyst, a vanadium based catalyst, a single site metallocene
4 catalyst, a cationic metal halide catalyst, a cobalt based catalyst, and a nickel based
5 catalyst.

1 13. The method of claim 12 wherein the liquid catalyst further
2 comprises an activator.

1 14. The method of claim 13 wherein the activator is selected from
2 the group consisting of alumoxanes; alkylaluminum compounds; alkyl aluminum
3 halides; alkyl aluminum hydrides; alkylsilyl halides; alkylidisilazanes; alkyl and aryl
4 alkoxysilanes; alkyl, aryl, and alkoxy boron compounds; and mixture thereof.

1 15. A method of preparing a supported catalyst from a liquid
2 catalyst, the method comprising:
3 dispersing the liquid catalyst in liquid nitrogen, the liquid nitrogen
4 being at a sufficiently low temperature to freeze the liquid catalyst and form a frozen
5 catalyst;
6 dispersing a solid carrier in the liquid nitrogen wherein the frozen
7 catalyst contacts the solid carrier; and
8 removing the liquid nitrogen.

1 16. The method of claim 15 wherein the step of removing the
2 liquid nitrogen is performed by evaporation of the liquid nitrogen.

1 17. The method of claim 15 wherein the solid carrier is an
2 inorganic oxide, inorganic silicate, inorganic chloride or organic polymer resin.

1 18. The method of claim 17 wherein the solid carrier is an
2 inorganic oxide selected from the group consisting of silica, alumina, silica-alumina,
3 magnesia, titania and zirconia.

1 19. The method of claim 15 wherein the liquid catalyst comprises
2 a complex of a group 3 to group 10 element of the Periodic Table or an
3 organometallic compound.

1 20. The method of claim 15 wherein the liquid catalyst comprises
2 a component selected from the group consisting of a Ziegler-Natta catalyst, a
3 chromium based catalyst, a vanadium based catalyst, a single site metallocene
4 catalyst, a cationic metal halide catalyst, a cobalt based catalyst, and a nickel based
5 catalyst.

1 21. The method of claim 20 wherein the liquid catalyst further
2 comprises an activator.

1 22. The method of claim 21 wherein the activator is selected from
2 the group consisting of alumoxanes; alkylaluminum compounds; alkyl aluminum
3 halides; alkyl aluminum hydrides; alkylsilyl halides; alkylidisilazanes; alkyl and aryl
4 alkoxysilanes; alkyl, aryl, and alkoxy boron compounds, and mixture thereof.

1 23. A supported catalyst made by the method comprising:
2 dispersing a liquid catalyst in a non-reactive liquid, the non-reacting
3 liquid being at a sufficiently low temperature to freeze the liquid catalyst and form
4 a frozen catalyst;

5 dispersing a solid carrier in the non-reactive liquid wherein the frozen
6 catalyst contacts the solid carrier; and
7 removing the non-reactive liquid.

1 24. The supported catalyst of claim 23 wherein the non-reactive
2 liquid is liquified nitrogen gas, liquified argon gas, or liquified helium gas.